Waukesha County Department of Parks and Land Use
Division of Environmental Health

Frequently Asked Questions about the West Nile Virus

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FREQUENTLY ASKED QUESTIONS ABOUT THE WEST NILE VIRUS

1. **Where did this virus come from?**
   West Nile virus (WNV) was first discovered in a woman from the West Nile District of Uganda in 1937. WNV spread across areas of Africa, Eastern Europe, West Asia, and the Middle East, eventually appearing in the Eastern United States in 1999.

2. **How is it transmitted?**
   WNV is transmitted through a bite by an infected mosquito and can result in encephalitis in infected people and horses. The virus is NOT transmitted from person to person. It is NOT transmitted from birds or other infected animals to people.

3. **If a mosquito bites me, what are my chances of getting the virus and becoming really sick?**
   Because less than 1% of mosquitoes carry the virus, and since less than 1% of persons infected with WNV develop severe illness, the chances of developing severe illness from any one mosquito bite are very, very small. People who get WNV, even those who have no symptoms, are probably immune from any future WNV infection.

4. **What are the symptoms of West Nile Virus?**
   Many persons bitten by an infected mosquito will not become infected at all. Of those that do become infected, the vast majority will have no symptoms or will experience only a mild illness that may include headache, muscle aches, rash, swollen lymph nodes and fever. In severe cases, symptoms can include confusion, disorientation, seizures, brain swelling and severe muscle weakness or paralysis. Onset of symptoms is usually between 5-15 days after being bitten by an infected mosquito. Any person with symptoms should see a doctor immediately.

5. **How many cases of West Nile Virus have been reported in the U.S. in 2007?**
   As of October 9, 2007, 2,803 confirmed human cases of WNV were reported and 70 deaths were reported to the Centers for Disease Control & Prevention in Atlanta, Georgia.

6. **Is West Nile Virus in Waukesha County?**
   Yes. As the virus has spread across the country the first animals to become infected are usually birds. Waukesha County Division of Environmental Health worked in cooperation with the Wisconsin Department of Natural Resources and the Wisconsin Division of Public Health to report and collect dead crows, ravens, and blue jay specimens. In 2002, these dead bird collection efforts were discontinued when by mid-summer seven crows had tested positive for West Nile virus. In addition, the Waukesha County Division of Environmental Health traps adult mosquitoes weekly at four locations within Waukesha County. The mosquitoes are then sent to a laboratory for analysis for the presence of West Nile Virus.

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7. **How can I keep from getting the West Nile Virus?**
You can further reduce your chances of becoming ill by protecting yourself from mosquito bites. One way to avoid mosquito bites is to apply an insect repellent containing DEET (N, N-diethyl-meta-toluamide) when you're outdoors.

The United States Environmental Protection Agency (EPA) recommends the following precautions when using insect repellents:

- Apply repellents only to exposed skin and/or clothing (as directed on the product label). Do not use under clothing.
- Never use repellents over cuts, wounds, or irritated skin.
- Do not apply to eyes and mouth, and apply sparingly around ears. When using sprays do not spray directly onto face; spray on hands first and then apply to face.
- Do not allow children to handle the products, and do not apply to children's hands. When using on children, apply to your own hands and then put it on the child.
- Do not spray in enclosed areas. Avoid breathing a repellent spray, and do not use it near food.
- Use just enough repellent to cover exposed skin and/or clothing. Heavy application and saturation is generally unnecessary for effectiveness; if biting insects do not respond to a thin film of repellent, then apply a bit more.
- After returning indoors, wash treated skin with soap and water or bathe. This is particularly important when repellents are used repeatedly in a day or on consecutive days. Also, wash treated clothing before wearing it again. If you suspect that you or your child are reacting to an insect repellent, discontinue use, wash treated skin, and then call your local poison control center. If/when you go to a doctor, take the repellent with you.
- Get specific medical information about the active ingredients in repellents and other pesticides by calling the National Pesticide Information Center (NPIC) at 1-800-858-7378. NPIC operates from 6:30 a.m. to 4:30 p.m. (Pacific Time), 9:30 a.m. to 7:30 p.m. (Eastern Time), 7 days a week. The NPIC Web site is: http://npic.orst.edu/
- When possible, wear long-sleeved clothes and long pants treated with repellents containing permethrin or DEET since mosquitoes may bite through thin clothing. Do not apply repellents containing permethrin directly to exposed skin. If you spray your clothing, there is no need to spray repellent containing DEET on the skin under your clothing.

Repellent products that do not contain DEET are not likely to offer the same degree of protection from mosquito bites as products containing DEET. Non-DEET repellents have not necessarily been as thoroughly studied as DEET, and may not be safer for use on children.

8. **How much insect repellant can be used to protect a child?**
No definitive studies exist in the scientific literature about what concentration of DEET is safe for children. The American Academy of Pediatrics has recommended that a cautious approach is to use products with a low concentration of DEET, 10% or less, on children aged 2 - 12. Most guidelines cite that it is acceptable to use repellents containing DEET on children over 2 years of age. Other experts suggest that it is acceptable to apply repellent with low concentrations of DEET to infants over 2 months old. It is recommended that for children under 2 years of age only one application per day of repellent containing DEET should be used.

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9. Can my pets get West Nile Virus?

At this time it appears that cats and dogs are not generally susceptible to the virus. However more research is currently being conducted. **WNV may be fatal to horses**. Horse owners are strongly encouraged to protect their horses from WNV by inoculation.

10. What are some other things that I can do to protect myself and reduce the mosquito population around my home?

1. When possible, wear long-sleeved shirts and long pants whenever you are outdoors.
2. Consider staying indoors at dawn, dusk, and in the early evening, which are peak mosquito biting times.
3. Place mosquito netting over infant carriers when you are outdoors with infants.
4. Limit the number of places available for mosquitoes to lay their eggs by eliminating standing water sources from around your home. Homeowners can take the following steps to prevent mosquito breeding on their own property:
    - Destroy or dispose of tin cans, old tires, buckets, unused plastic swimming pools or other containers that collect and hold water. Do not allow water to accumulate in the saucers of flowerpots, cemetery urns or in pet dishes for more than 2 days.
    - Clean debris from rain gutters and remove any standing water under or around structures, or on flat roofs. Check around faucets and air conditioner units and repair leaks or eliminate puddles that remain for several days.
    - Change the water in birdbaths and wading pools at least once a week and stock ornamental pools with top feeding predacious minnows. Ornamental pools may be treated with biorational larvicides (*Bacillus thuringiensis* subsp. *israelensis* (Bti) under certain circumstances. Commercial products containing Bti can be purchased at many hardware/garden stores for homeowner use. Insect growth regulator (IGR) technology for mosquito control has recently been developed and can be found at many home/garden and pet specialty stores.
    - Fill or drain puddles, ditches and swampy areas, and either remove, drain or fill tree holes and stumps with mortar. These areas may be treated with the above Bti or methoprene products also.
    - Eliminate seepage from cisterns, cesspools, and septic tanks.
    - Eliminate standing water around animal watering troughs. Flush livestock water troughs twice a week.
    - Check for trapped water in plastic or canvas tarps used to cover boats, pools, etc. Arrange the tarp to drain the water.
    - Check around construction sites or do-it-yourself improvements to ensure that proper backfilling and grading prevent drainage problems.
    - Irrigate lawns and gardens carefully to prevent water from standing for several days.
    - If ditches do not flow and contain stagnant water for one week or longer, they can produce large numbers of mosquitoes. Report such conditions to your local municipality who then can take action to remedy the situation.
    - To reduce mosquito infestations in the house, maintain functioning screens over doors and windows. A porch or deck also can be enclosed with screening. Outside light use should be reduced and yellow light bulbs used when possible.

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5. Homeowners might consider spraying insecticides to shade trees, hedges and shrubs adjacent to the foundation of structures. Homeowners should realize, however, that most insecticides are not mosquito specific. **Always read and follow the label when applying pesticides.**

11. What can communities do to control mosquitoes?

Insecticides used for mosquito management are grouped into two categories:

- **Larvicides** are used to control immature (larval) mosquitoes in aquatic habitats.
- **Adulticides** are used to control adult mosquitoes.

Note: All insecticides used must be registered with the U.S. Environmental Protection Agency. Restricted pesticides can only be used by Certified Pest Control Operators.

Larviciding is the most efficient and effective chemical method of managing mosquitoes because the larvae are concentrated in relatively small, well defined, and aquatic habitats. Larvicides are applied to mosquito-breeding habitats when there is an abundance of larvae. Larvicides are applied in small areas using hand-held equipment. A typical larvicide used is the bacterial compound Bti (*Bacillus thuringiensis* var. *israelensis*). Bti must be ingested by the feeding larvae to effective. Bti targets mosquitoes but can affect other flies such as black flies and some midges. It has a short effective life (two to three days) and must be reapplied to each new generation of mosquitoes. If larval control methods are successful, the need for adult mosquito management is greatly reduced or eliminated.

Information on larval densities, age, and species is used to determine when and where insecticide treatment of larvae should be made. Areas of chronic mosquito breeding may be targeted for **marsh management projects**, which provide long-term biological control by creating shallow ponds for fish that eat the mosquito larvae and pupae. Water management also enhances the area for wildlife.

Adulticiding provides an immediate but short-term reduction in adult mosquito numbers. Truck-mounted equipment is used to create tiny, ultra-low volume (ULV) droplets of insecticide that drift through the swarm of mosquitoes. Truck-mounted applications are used in relatively small-populated areas, such as towns and housing developments. In the event of a declared public health emergency, aircraft can be used to aerially apply adulticides to much larger areas. A typical adulticide used is resmethrin, a synthetic pyrethroid. This product has the same active ingredient as several over-the-counter yard sprays. Resmethrin is short-lived (three to four days) and must be reapplied to each mosquito infestation. It is safe to the environment and human health when applied as directed. Adulticiding is more costly than larviciding since adulticides are usually applied over larger areas.

Larval Control

The most effective way to control mosquitoes is to find and eliminate their breeding sites. **Eliminating large breeding areas such as swamps or sluggishly moving streams or ditches may require community-wide effort. This is usually a task for an organized mosquito control program**.

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Biological Mosquito Control Using Water Management

Biological control involves managing a pest using its natural enemies. Water management controls mosquitoes by altering sites so they are unsuitable for egg and larval development and by providing access to these sites for fishes that consume mosquito larvae and pupae. Biological control provides more permanent mosquito management than chemical insecticides, resulting in a substantial reduction in insecticide applications and costs.

12. Where do I go for further information?

Questions about West Nile Virus may be directed to the Waukesha County Divisions of Environmental Health, 262-896-8300 and Waukesha County Division of Public Health, 262-896-8430. We want to thank the public for their continued involvement and cooperation in this effort.

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